DRAFT

STAFF REPORT

Amendments to

Regulation 8

ORGANIC COMPOUNDS

Rule 5

STORAGE OF ORGANIC LIQUIDS

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

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I. Executive Summary

The proposed amendments to Regulation 8, Rule 5 include:

Re-formatting the rule and making various editorial changes to improve clarity. The most significant proposed formatting change is the consolidation of existing Sections 8-5-301 through 8-5-305, which establish the general design and emission control requirements according to tank size and material vapor pressure, into a tabular format in proposed Section 8-5-301.

Incorporation of changes recommended by U.S. EPA in the technical support document (TSD) dated 7/9/01. The TSD was issued in conjunction with the partial disapproval of the District State Implementation Plan (SIP) by U.S. EPA on 11/9/01. With regard to this rule, EPA's partial disapproval was based on concerns that two limited exemptions in the rule were vaguely written, such that the exemptions could be applied under more circumstances than appropriate.

Implementation of Control Measure SS-12 from the District's 2001 Ozone Attainment Plan. This control measure calls for better tank seals or upgrades when seals are replaced and enhanced inspection of seals and fittings.

II. Background

Regulation 8, Rule 5 limits organic emissions from liquid storage tanks. The rule affects mostly petroleum refineries, chemical plants and bulk gasoline terminal distribution facilities. Some other industries that store significant amount of organic liquids are also subject to the rule. The rule was originally adopted in 1978 and has been amended a number of times, most recently on December 15, 1999. The primary reasons for the proposed modification of the rule are to address concerns expressed by U.S. EPA that the rule, specifically Sections 8-5-111 and 8-5-112, does not conform to EPA guidance, and also to implement Control Measure SS-12 from the District's 2001 Ozone Attainment Plan. In addition, various editorial improvements to the rule are proposed.

III. Proposed Rule Amendments

The District has committed to make various improvements to this rule, which may be grouped into 3 categories:

1. Editorial changes. Various editorial changes are proposed which will make the rule clearer and easier to use. These changes include re-formatting sections of the rule which establish the basic control requirements, based on tank size and the vapor pressure of the tank contents, into a tabular format. This will consolidate the basic control requirements into a single section of the rule. Other editorial changes include deletion or replacement of ambiguous or potentially misleading terms. Also, existing sections of the rule are proposed to be re-located to different locations within the rule to provide a more logical rule structure.

2. Incorporation of changes recommended by U.S. EPA in the technical support document (TSD) dated 7/9/01. The TSD was issued in conjunction with the partial disapproval of the District State Implementation Plan (SIP) by U.S. EPA on 11/9/01. With regard to this rule, EPA's partial disapproval was based on concerns that two limited exemptions in the rule were vaguely written, such that the rule:

> *"...exempts sources from control requirements during certain startup, shutdown, and maintenance conditions in violation of EPA's 1999 guidance on excess emission during malfunctions, startup, and shutdown."* [from U.S. EPA final SIP action]

The TSD suggests the following amendments to the rule:

> *1. Revise Rule 8-5 to clearly define "tank cleaning," "stock change," "temporary removal from service," and the other conditions addressed 8-5-111. We are concerned, for example, that "tank cleaning" could be inappropriately interpreted to cover all tank exterior cleaning. We are also concerned because the structure of the first paragraph of 8-5-111 seems to imply that tank cleaning, etc., does not require temporary removal from service. Depending on the definition of temporary removal from service, this might also suggest that an exemption from the vapor recovery requirements is not always necessary.*
>
> *2. Revise Rule 8-5 to clearly define "roof repair," "primary seal inspection," and other conditions addressed by 8-5-112.*
>
> *3. Demonstrate (e.g., in a District staff report) that 8-5-111 and 8-5-112 fulfill all requirements of Section III. A. of the 1999 EPA policy. For example, III.A.2 specifies that, "Use of the control strategy...must be technically infeasible during startup or shutdown periods."* [from U.S. EPA TSD]

The definitions suggested in Items 1 and 2 are included in the proposed rule. Item 3 is discussed in Section VII of this report.

3. Implementation of Control Measure SS-12 from the District's 2001 Ozone Attainment Plan. This control measure calls for:

"...better seals or upgrades upon replacement and more frequent inspections of seals and fittings". [from BAAQMD SS-12]

The model for the proposed changes is the existing South Coast Air Quality Management District (SCAQMD) Rule 463 (as amended 3/11/94).

The proposed amendments to Regulation 8-5 are listed below.

Section (refers to proposed section #)	Change
Index	Index will not be updated until proposed changes are finalized.
8-5-110.1, 8-5-110.2	Delete "stationary", and clarify in definition 8-5-202 which tanks are regulated; this is an editorial change.
8-5-110.2	Delete "offset fill line" which is undefined, and replace with "submerged fill pipe"; this is an editorial change.
8-5-111, 8-5-112	**Clarify situations where limited exemptions apply in accordance with 7/9/01 EPA technical support document (TSD) regarding limited disapproval of Reg 8-5 in SIP. Definitions 8-5-217, 218, 219, 220 are also added to comply with the TSD.**
8-5-202	Revise definition of "storage tank" to clarify that "portable tanks" are not exempt, except when they are part of a mobile vehicle - this is the intent of the current rule, although it may be misinterpreted to exempt all tanks which are not permanently fixed in place; this is an editorial change.
8-5-203	Delete definition of "submerged fill pipe" since requirements are moved to 8-5-302; this is an editorial change
8-5-206	**Revise definition of "gas tight" to a detected organic concentration less than 100 ppm to be consistent with the most strict standard in Regulation 8, Rule 18 ("Equipment Leaks")**
8-5-215	Correct typographical error (change "pasing" to "passing"); this is an editorial change.
8-5-217	**Add definition of "decommissioning" to address TSD guidance.**
8-5-218	**Add definition of "stock change" to address TSD guidance.**
8-5-219	**Add definition of "tank cleaning" to address TSD guidance.**
8-5-220	**Add definition of "temporary removal from service" to address TSD guidance.**
8-5-301	Consolidate existing Sections 8-5-301, 302, 303, 304 and 305 in proposed Section 8-5-301. This is an editorial change.
8-5-302	Transfer the requirements for submerged fill pipes from existing definition 8-5-203; this is an editorial change.
8-5-303	Transfer the requirements for pressure vacuum valves from existing Sections 8-5-302, 303 and 320.3; this is an editorial change.

8-5-304	Transfer the requirement in existing Section 8-5-311.1 for external floating roof tanks; this is an editorial change.
8-5-305.1, 305.2 and 322.5	1) Transfer the requirements from existing Section 8-5-311.2 for internal floating roof tanks are to proposed Sections 8-5-305.1 and 305.2; this is an editorial change. 2) Add explicit option of a metallic shoe primary seal to Section 305.1 and 305.2; this is an editorial change since it is only a change in nomenclature – instead of including metallic shoe seals as a type of liquid-mounted seal, which is not a consistent categorization among air districts, metallic shoe seals will be treated as a unique class of seal. **3) Add seal replacement criteria to establish when a repaired seal is considered new and subject to most stringent sealing standards to Section 305.2. This is a necessary clarification to proposed Section 8-5-305.1 (transferred from existing Section 8-5-311.2.3) and Section 8-5-322.5, since these sections may be interpreted to allow multiple partial seal replacements which completely replace a seal over time, without triggering the requirements for new seals. The proposed criteria is the same criteria which is currently used by the BAAQMD Permit Services Division to determine when a permit is required for a partial seal replacement.**
8-5-305.3	**Add limit on vapor space organic concentration for internal floating roof tanks (conformity with South Coast rule).**
8-5-305.4	Transfer the requirement in existing Section 8-5-330 for internal floating roof tanks; this is an editorial change.
8-5-306	Transfer the requirement in existing Section 8-5-311.3 for emission control systems; this is an editorial change.
8-5-307	Transfer the requirement in existing Section 8-5-305 for pressure tanks; this is an editorial change.
8-5-320	Incorporate existing Section 320.3 into proposed Section 303; transfer the secondary seal requirement in existing Section 8-5-320.1 to proposed Section 322; these changes are editorial.
8-5-321.2	Add the option for a metallic shoe seal. The language of Section 321.3 indicates that this was previously intended to be an acceptable option. Therefore, this is an editorial change.
8-5-321.3	**Riveted tanks with the highest emissions (external floating roof), will be immediately subject to the primary seal standards for welded tanks. Riveted tanks with lower emissions (internal floating roof) will continue to be subject to less strict standards until 6/1/06, after which these tanks will also be subject to the standards for welded tanks (conformity with South Coast rule).**
8-5-322.3, 8-5-322.4 (existing)	Delete the distinction between welded and riveted tanks because these tanks have identical secondary seal standards; this is an editorial change.
8-5-322.4 (new)	Transfer the prohibition from mounting a secondary seal on the primary seal from existing Section 8-5-320.1; this is an editorial change.

8-5-328	Consolidate existing requirements 8-5-328.1 and 328.2 in proposed Section 8-5-328.1; this is an editorial change. Consolidate existing requirement 8-5-329 in proposed Section 8-5-328.2; this is an editorial change.
8-5-401.1	**Currently, primary and secondary seals on external floating roof tanks are subject to inspection every 1, 5 or 10 years, as specified in existing Sections 8-5-401 and 402. Consolidate these inspection requirements in proposed Section 8-5-401, with a frequency of twice per year (conformity with South Coast rule).**
8-5-401.2	**Currently, external floating roof tanks are subject to fitting inspection every 1 or 10 years, as specified in existing Sections 8-5-402.1 and 402.3. Proposed Section 8-5-401.2 would require all external floating roof tanks to have fitting inspections twice per year (conformity with South Coast rule).**
8-5-402.1	**Currently, primary and secondary seals on internal floating roof tanks are subject to inspection every 10 years, as specified in existing Sections 8-5-401.2 and 402.2. Proposed Section 8-5-402.1 would maintain this frequency, but augment monitoring with the new vapor space monitoring in proposed Section 8-5-402.3 (conformity with South Coast rule).**
8-5-402.2	**Currently, primary and secondary seals on internal floating roof tanks are subject to visual inspection every year, as specified in existing Section 403. This procedure requires disturbing the secondary seal to inspect the primary seal. Proposed Section 8-5-402.2 would increase the frequency of secondary seal visual inspections to twice per year, but replace the primary seal inspection with the new vapor space monitoring in proposed Section 8-5-402.3 (conformity with South Coast rule).**
8-5-402.3	**Add vapor space VOC concentration monitoring requirement (semi-annual) for internal floating roof tanks (conformity with South Coast rule).**
8-5-402.4	**Currently, internal floating roof tanks are subject to fitting inspection every 10 years, as specified in existing Sections 8-5-402.1 and 402.2. Proposed Section 8-5-402.4 would require all external floating roof tanks to have fitting inspections twice per year (conformity with South Coast rule).**
8-5-403	**Add fitting inspection requirement (semi-annual) for fixed roof tanks (conformity with South Coast rule).**
8-5-404	**Revise certification requirements to reflect proposed seal and fitting inspection requirements and frequencies.**
8-5-501.1	**Add record retention requirement for material storage records. This is a necessary addition since this section currently requires records, but specifies no retention period. 24 months is the standard retention requirement for District rules.**
8-5-501.2	**Require records of seal replacements to allow monitoring of compliance with 8-5-305.2 and 8-5-322.5. This requirement is necessary to allow implementation of proposed Section 8-5-305.1 and 322.5. The retention requirement has been set at 10 years because seal replacements are**

	usually infrequent and an extended retention requirement is necessary to record multiple partial seal replacements over an extended period of time.

IV. Emissions and Emissions Reductions

Specific proposed changes which may result in emission reductions are discussed here.

Proposed Sections 8-5-111, 112, 217, 218, 219 and 220. The proposed clarifications are intended to ensure that exemptions from abatement requirements are not applied except when necessary and appropriate. Although these clarifications may prevent future emissions which may have otherwise occurred, the District has no specific knowledge of inappropriate application of these exemptions, and therefore no basis for quantification of an emission reduction.

Proposed Section 8-5-206. The "gas tight" criteria for pressure-vacuum valves and emission control systems would be reduced from 10,000 ppm to 100 ppm for consistency with Regulation 8, Rule 18 ("Equipment Leaks"). This change obviously has the potential to result in emission reductions. However, these reductions have not been quantified, partly because of the inherent difficulty in accurately quantifying emissions from fugitive emission sources such as leaking valves and connectors.

Proposed Section 8-5-305.1 and 8-5-322.5. Criteria would be added to these sections for the amount of seal replacement on existing floating roof tanks which would trigger the requirements for a new seal. Although this criteria appears to be a new requirement, it is simply a codification of the policy used by the Permit Services Division since at least 1989 to determine when a seal repair requires a permit and triggers the requirements for a new seal. Therefore, it does not represent a new requirement nor will it result in new emission reductions.

Proposed Section 8-5-305.3. This section would limit the concentration of organic vapors inside the vapor space above the floating roof on internal floating roof tanks. The purpose of this limit is to ensure the overall effectiveness of the roof and fitting seals. The specific limit is taken from South Coast Rule 463. Because this is a completely new requirement, the District does not have historical data on organic concentrations in tank vapor spaces. Thus, there is no basis to estimate the emission reduction expected from this measure.

Proposed Section 8-5-321.3. Currently, riveted tanks have a less strict primary sealing standard, and an equivalent secondary sealing standard, compared to welded tanks. This distinction exists because it is more difficult to maintain a close seal against the inner wall of a riveted tank, because the rivets protrude from the tank wall. Welded tanks have smoother inner surfaces and therefore can maintain tighter seals. This distinction does not exist in South Coast Rule 463.

Riveted external floating-roof tanks may have significantly higher emissions than tanks where the tank roof is protected from the wind (e.g. internal floating roof tanks, including external floating-roof tanks which are covered by a dome), since wind increases losses from tank roof fittings. Therefore, riveted external floating-roof tanks will be required to immediately comply with the existing standards for welded tanks. Internal floating-roof tanks will be allowed to comply with the existing standards for welded tanks until 6/1/06, after which these tanks will also be subject to the standards for welded tanks.

The District database currently lists 30 permitted tanks as having riveted construction. 25 of these 30 tanks are located at 4 different refineries. The remaining 5 tanks are located at 2 different terminals. The emission reduction from this proposal is difficult to calculate because tank operators may comply in various ways. The highest emission reductions would result if all riveted external floating-roof tanks are taken out of service immediately, and if riveted tanks with internal floating-roofs or domed external floating roofs are phased out by 6/1/06. However, tank operators may leave riveted external floating-roof tanks in service by changing them to unregulated service (where materials with less than 0.5 psia vapor pressure is stored). Riveted tanks with internal floating-roofs or domed external floating-roofs may also be kept in service after 6/1/06 by changing them to unregulated service.

Proposed Section 8-5-401.1. Currently, primary and secondary seals on external floating roof tanks are subject to inspection every 1, 5 or 10 years, as specified in existing Sections 8-5-401 and 402. Proposed Section 8-5-401 would consolidate external floating roof seal inspection requirements, with a frequency of twice per year, in accordance with South Coast Rule 463. There is no accepted methodology to quantify emission changes related to different seal conditions for a specific seal type. Therefore, even if a prediction could be made (this has not been attempted) of the expected improvement in seal condition resulting from more frequent inspection, there would be no way to relate, with confidence, this improvement to an emission reduction.

Proposed Section 8-5-401.2. Currently, external floating roof tanks are subject to fitting inspection every 1 or 10 years, as specified in existing Sections 8-5-402.1 and 402.3. Proposed Section 8-5-401.2 would require all external floating roof tanks to have fitting inspections twice per year, in accordance with South Coast Rule 463. This change has the potential to result in emission reductions. However, these reductions have not been quantified, partly because of the inherent difficulty in accurately quantifying emissions from fugitive emission sources such as leaking tank fittings.

Proposed Section 8-5-402.2. Currently, primary and secondary seals on internal floating roof tanks are subject to visual inspection every year, as specified in existing Section 403. This procedure requires disturbing the secondary seal to inspect the primary seal, potentially decreasing the life of the secondary seal. Proposed Section 8-5-402.2 would increase the frequency of secondary seal visual inspections to twice per year, but replace the primary seal inspection with the new vapor space monitoring in proposed Section 8-5-402.3, in accordance with South Coast Rule 463. There is no accepted methodology to quantify emission changes related to different seal conditions for a specific seal type.

Therefore, even if a prediction could be made (this has not been attempted) of the expected improvement in seal condition resulting from more frequent inspection, there would be no way to relate, with confidence, this improvement to an emission reduction.

Proposed Section 8-5-402.3. This section would add a twice-yearly inspection requirement for the vapor space of internal floating roof tanks to monitor compliance with proposed Section 8-5-305.3, in accordance with South Coast Rule 463; this is a new requirement. Because this is a completely new requirement, the District does not have historical data on organic concentrations in tank vapor spaces. Thus, there is no basis to estimate the emission reduction expected from this measure.

Proposed Section 8-5-402.4. Currently, internal floating roof tanks are subject to fitting inspection every 10 years, as specified in existing Sections 8-5-402.1 and 402.2. Proposed Section 8-5-402.4 would require all external floating roof tanks to have fitting inspections twice per year, in accordance with South Coast Rule 463. This change has the potential to result in emission reductions. However, these reductions have not been quantified, partly because of the inherent difficulty in accurately quantifying emissions from fugitive emission sources such as leaking tank fittings.

Proposed Section 8-5-403. This section would add a twice-yearly inspection requirement for pressure vacuum valves on fixed roof tanks to monitor compliance with proposed Section 8-5-303, in accordance with South Coast Rule 463; this is a new requirement. This change has the potential to result in emission reductions. However, these reductions have not been quantified, partly because of the inherent difficulty in accurately quantifying emissions from fugitive emission sources such as pressure-vacuum valves.

Proposed Section 8-5-404. The certification section is revised to reflect the proposed revisions to seal and fitting inspection requirements and frequencies.

Proposed Section 8-5-501.1. This section would add a 24-month record retention requirement for tank contents records. The rule currently includes a recordkeeping requirement, but does not specify the length of time that records must be retained. 24 months is the standard District record retention requirement.

Proposed Section 8-5-501.2. This section would add a recordkeeping and 10-year record retention requirement for seal replacement work on floating roof tanks. This is necessary to monitor compliance with proposed Sections 8-5-305.1 and 8-5-322.5.